# **Brief Resume**

# P. W. Lehman, Ph.D.

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**Education:** B.S. Renewable Natural Resources (1972), M.S. Ecology (1974), and Ph.D. Ecology (1979) at University of California, Davis, CA

**Research experience**: estuarine aquatic food web ecology; water quality, phytoplankton ecology, cyanobacteria harmful algal bloom dynamics and food web impacts; eutrophication; freshwater tidal wetland water quality and primary productivity; dissolved oxygen TMDL; and climate change.

# **Professional Experience:**

1982-pres.: Senior Environmental Scientist, Division of Environmental Services, California Department of Water Resources, West Sacramento, CA

1980-1981: Instructor, Chapman College (extension), Alameda, CA

1978-1980: Post Doctor and Research Associate, University of California at Davis

1977-1978: National Research Council Fellowship, Bedford Institute of Oceanography, Nova Scotia, Canada

# **Selected publications:**

**P. W. Lehman**, C. Kendall, M. A. Guerin, M. B. Young, S. R. Silva, G. L. Boyer and S. J. Teh. In press. Characterization of the *Microcystis* bloom and its nitrogen supply in San Francisco Estuary using stable isotopes. Estuaries and Coasts. DOI: 10.1007/s12237-014-9811-8

B. Herbold, D. M. Baltz, L. Brown, R. Grossinger, W. Kimmerer, **P. Lehman**, P. B. Moyle, M. Nobriga and C. A. Simenstad. 2014. The Role of Tidal Marsh Restoration in Fish Management in the San Francisco Estuary. San Francisco Estuary and Watershed Science 12 (1).

**Lehman, P. W.**, K. Marr, G. L. Boyer, S. Acuna and S. J. Teh. 2013. Long-term trends and causal factors associated with *Microcystis* abundance and toxicity in San Francisco Estuary and implications for climate change impacts. Hydrobiologia 718:141-158.

S. Acuña, D-F. Deng, **P. W. Lehman** and S. Teh. 2012. Subleathal Dietary effects of *Microcystis* on Sacramento splittail, *Pogonichthys macrolepidotus*. Aquatic Toxicology 110-111:1-8.

Brooks, M. L., E. Fleishman, L. R. Brown, **P. W. Lehman**, I. Werner, N. Scholz, C. Mitchelmore, J. R. Lovvorn, M. L. Johnson, D. Schlenk, S. van Drunick, J. I. Drever, D. M. Stoms, A. E. Parker, and R. Dugdale. 2012. Life Histories, Salinity Zones, and Sublethal Contributions of Contaminants to Pelagic Fish Declines Illustrated with a Case Study of San Francisco Estuary, California, USA Estuaries and Coasts 35:603-621.

- **Lehman, P. W.,** S. Mayr, L. Mecum and C. Enright. 2010. The freshwater tidal wetland Liberty Island, CA was both a source and sink of inorganic and organic material to the San Francisco Estuary. Aquatic Ecology 44:359-372.
- Deng, D-F., K. Zheng, F-C. Teh, **P. W. Lehman** and S. J. Teh. 2010. Toxic Threshold of Dietary Microcystin (-LR) for Quart Medaka. Toxicon 55:787-794.
- Baxa, D. V., T. Kurobe, K. Ger, **P. W. Lehman**, and S. J. Teh. 2010. Estimating the abundance of toxic Microcystis spp. in the San Francisco Estuary using quantitative real-time PCR. Harmful Algae 9:342-349.
- **Lehman, P. W.**, S. J. Teh, G. L. Boyer, M. Nobriga, E. Bass and C. Hogle. 2010. Initial impacts of *Microcystis* on the aquatic food web in the San Francisco Estuary. Hydrobiologia 637:229-248.
- Moisander, P. H., **P. W. Lehman**, M. Ochiai and S. Corum. 2009. Diversity of the toxic cyanobacterium *Microcystis aeruginosa* in the Klamath River and San Francisco Bay delta, California. Aquatic Microbial Ecology 57:19-31.
- **Lehman, P. W.,** G. Boyer, M. Satchwell and S. Waller. 2008. The influence of environmental conditions on the seasonal variation of *Microcystis* cell density and microcystins concentration in San Francisco Estuary. Hydrobiologia 600:187-204.
- **Lehman, P. W.**, T. Sommer and L. Rivard. 2008. The influence of floodplain habitat on the quantity and quality of riverine phytoplankton carbon produced during the flood season in San Francisco Estuary. Aquatic Ecology 42:363-378.
- **Lehman, P. W.** 2007. The influence of phytoplankton community composition on primary productivity along the riverine to freshwater tidal continuum in the San Joaquin River, California. Estuaries and Coasts 30: 82-93.
- **Lehman, P. W.**, G. Boyer, C. Hall, S. Waller and K. Gehrts. 2005. Distribution and toxicity of a new colonial *Microcystis aeruginosa* bloom in the San Francisco Bay Estuary, California. Hydrobiologia 541:87-99.
- **Lehman, P. W.**, J. Sevier, J. Giuliannotti and M. Johnson. 2004. Sources of oxygen demand in the lower San Joaquin River, California. Estuaries 27:405-418.
- **Lehman**, **P. W**. 2004. The influence of climate on mechanisms that affect lower food web production in estuaries. Estuaries 27:312-325.
- **Lehman, P. W**. 2000. The influence of climate on phytoplankton community carbon in San Francisco Bay Estuary. Limnology and Oceanography 45:580-590.
- **Lehman**, **P. W**. 2000. Phytoplankton, carbon, cell diameter and species composition in the low salinity zone of northern San Francisco Bay Estuary. Estuaries 23:216-230.
- **Lehman**, **P. W.** 1996. Changes in chlorophyll *a* concentration and phytoplankton community composition with water year type in the upper San Francisco Bay estuary. In J. T. Hollibaugh (ed.), San Francisco Bay: The Ecosystem. Pac. Div., Amer. Assoc. Adv. Sci.
- **Lehman, P. W.** 1992. Environmental factors associated with long-term changes in chlorophyll a

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concentrations in the Sacramento-San Joaquin Delta and Suisun Bay, California. Estuaries 15:335-348.

- **Lehman**, **P. W.** and R. W. Smith. 1991. Environmental factors associated with phytoplankton succession for the Sacramento-San Joaquin Delta and Suisun Bay estuary. Estuarine, Coastal and Shelf Science. 32(2):105-128.
- **Lehman, P. W.** 1981. Comparison of chlorophyll *a* and carotenoid pigments as predictors of phytoplankton biomass. Marine Biology 65:237-244.
- **Lehman, P. W.,** W. Kuhn Silk and A. W. Knight. 1981. Protein and nitrate content of Lemna sp. as a function of developmental stage and incubation temperature. Plant Physiology 68:127-132.

#### Government reports:

- **Lehman, P. W. 2001.** The influence of climate on food web production in northern San Francisco Bay. In J. West and L. Buffaloe (eds). Proceedings of the Pacific Climate (PACLIM) Workshop. Interagency Ecological Studies Program for the Sacramento-San Joaquin Estuary, Sacramento, CA.
- **Lehman, P. W. 1999**. Phytoplankton species composition, size structure and biomass and their potential influence on copepod food quality and quantity in the low salinity zone of San Francisco Bay Estuary. Interagency Ecological Studies Program for the Sacramento-San Joaquin Estuary, Sacramento, CA. Technical report.
- **Lehman, P. W. 1997**. The influence of climate on phytoplankton in San Francisco Bay Estuary. pages 105-120, In C. M. Isaacs and V. L. Tharp (eds). Proceedings of the thirteenth annual Pacific Climate (PACLIM) Workshop. Interagency Ecological Studies Program for the Sacramento-San Joaquin Estuary, Sacramento, CA. Technical Report 53.
- **Lehman, P. W. 1996.** Water Quality Conditions in the Sacramento-San Joaquin Delta, 1970-1993. California Department of Water Resources, Sacramento, CA 124 pp.
- **Lehman, P. W. 1991**. Variable IX: Atmospheric, Biological and Miscellaneous, pages 339-344. In: D. R. Cayan, D. R. McLain, W. D. Nichols and J. S. DiLeo-Stevens (eds.) Monthly Climatic Time Series Data for the Pacific Ocean and Western Americas. U.S. Geological Survey Open-File Report 91-92, Menlo Park, CA.
- **Lehman, P. W. 1991**. Influence of climate on environmental factors associated with long-term changes in chlorophyll production for the Sacramento-San Joaquin Delta and Suisun Bay, California, pages 63-70. In: K. T. Redmond (ed.). Proceedings of the eighth annual Pacific Climate (PACLIM) Workshop. Technical Report 31. Interagency Ecological Studies Program for the Sacramento-San Joaquin Estuary, Sacramento, CA.
- **Lehman, P. W. 1990**. Evaluation of selected biological factors that may have contributed to the drought and post-drought decline in chlorophyll a concentration. Technical Report 22. Interagency Ecological Studies Program for the Sacramento-San Joaquin Estuary, Sacramento, CA.
- **Lehman, P. W. 1990**. Time series analyses of biological and environmental variables for Suisun Bay and the Sacramento and San Joaquin Rivers, pages 67-69. In: J. L. Betancourt and A. M. MacKay (eds.). Proceedings of the sixth annual Pacific Climate (PACLIM) Workshop. Technical Report 23. Interagency Ecological Studies Program for the Sacramento-San Joaquin Estuary, Sacramento, CA.
- **Lehman, P. W.** various. Water Quality Conditions in the Sacramento-San Joaquin Delta. California Department of Water Resources, Sacramento, CA.

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**Professional membership:** American Society of Limnology and Oceanography; Estuarine Research Federation

**Recent collaborators:** S. J. Teh, D. Deng, D. Baxa and S. Acuna, University of California at Davis; R. Kudela, U. C. Santa Cruz; M. Young, U. S. Geological Survey, M. Brooks, University of Southern Illinois; L. Brown, U.S. Geological Survey; S. Simenstad University of Washington; N. Poulton, Bigelow Laboratory for the Ocean Sciences; G. L. Boyer, State University of New York at Syracuse; P. Moisander, Dartmouth